

of Vegetables altogether *mechanical*, and as necessary, that (water and warmth being apply'd to the bottom of the sprig of a Plant) some of it should be carried upwards into the stem, and thence distributed into the leaves, as that the water of the *Thames* covering the bottom of the Mills at the Bridge foot of *London*; and by the ebbing and flowing of it, passing strongly by them, should have some part of it convey'd to the Cesterns above, and thence into several houses and Cesterns up and down the City.

Observ. XXXIII. *Of the Scales of a Soal, and other Fishes.*

HAVING hinted somewhat of the skin and covering of terrestrial Animals, I shall next add an Observation I made on the skin and Scales of a *soal*, a small Fish, commonly enough known; and here in Fishes, as well as other Animals, Nature follows its usual method, framing all parts so, as that they are both usefull and ornamental in all its composures, mingling *utile* and *dulce* together; and both these designs it seems to follow, though our unassisted senses are not able to perceive them: This is not onely manifest in the covering of this Fish only, but in multitudes of others, which it would be too long to enumerate, witness particularly that small Sand Shell, which I mention'd in the XI. Observation, and infinite other small Shells and Scales, divers of which I have view'd. This skin I view'd, was flead from a pretty large *soal*, and then expanded and dry'd, the inside of it, when dry, to the naked eye, look'd very like a piece of Canvas, but the *Microscope* discover'd that texture to be nothing else, but the inner ends of those curious Scolop'd Scales I, I, I, in the second Figure of the XXI. Scheme, namely, the part of G G G G (of the larger representation of a single Scale, in the first Figure of the same Scheme) which on the back side, through an ordinary single Magnifying Glass, look'd not unlike the Tiles on an house.

The outside of it, to the naked eye, exhibited nothing more of ornament, save the usual order of ranging the Scales into a *triagonal* form, onely the edges seem'd a little to shine, the finger being rubb'd from the tail-wards towards the head, the Scales seem'd to stay and raze it; But through an ordinary Magnifying glass, it exhibited a most curiously carved and adorned surface, such as is visible in the second Figure, each of those (formerly almost imperceptible) Scales appearing much of the shape I, I, I; that is, they were round, and protuberant, and somewhat shap'd like a Scolop; the whole Scale being creas'd with curiously wav'd and indented ridges, with proportionable furrows between; each of which was terminated with a very sharp transparent bony substance, which, like so many small Turnpikes, seem'd to arm the edges.

The back part K K K was the skin into which each of these Scales were very deeply fix'd, in the curious regular order, visible in the second Figure.

